FLOOD INSURANCE STUDY

MADISON COUNTY, FLORIDA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
GREENVILLE, TOWN OF	120150
LEE, TOWN OF	120151
MADISON, CITY OF	120152
MADISON COUNTY (UNINCORPORATED AREAS)	120149

MAY 3, 2010

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
12079CV000A

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

Initial Countywide FIS Effective Date: May 3, 2010

Revised Countywide FIS Date:

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FLOOD INSURANCE STUDY
MADISON COUNTY, FLORIDA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This countywide Flood Insurance Study (FIS) investigates the existence and severity of flood hazards in, or revises and updates previous FISs/Flood Insurance Rate Maps (FIRMs) for the geographic area of Madison County, Florida, including: the City of Madison, the Towns of Greenville and Lee, and the unincorporated areas of Madison County (hereinafter referred to collectively as Madison County).

This FIS aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This FIS has developed flood risk data for various areas of the county that will be used to establish actuarial flood insurance rates. This information will also be used by Madison County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and will also be used by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some States or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses from the FIS report dated June 4, 1987, were performed by the U.S. Army Corps of Engineers (USACE), Jacksonville District (the study contractor) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement No. EMW-E-1153, Project Order No. 1. That study was completed in July 1985.

Hydrologic and hydraulic analyses for the Aucilla River were obtained from a study entitled, “Flood Insurance Study, Aucilla River, Jefferson, Madison and Taylor Counties, Florida” (Suwannee River Water Management District, 1984).

There are no previous FIS reports for the City of Madison or the Towns of Greenville and Lee; therefore, the previous authority and acknowledgment information for these communities is not included in this FIS.

The digital base map files were derived from Florida Department of Transportation aerials produced at a scale of 1:200 from photography dated 2007. Additional information was derived from USGS Digital Line Graphs and USGS 5-foot contours. Additional information was also obtained from other sources, such as photogrammetry-derived data. Users of this FIRM should be aware that minor adjustments may have been made to specific base map features.

The coordinate system used for the production of this FIRM is Florida State Plane North, North American Datum of 1983 (NAD 83), in units of feet. The State Plane tics were shown on the FIRM panels. Corner coordinates shown on the FIRM are in latitude and longitude. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of information shown on the FIRM.

1.3 Coordination

Consultation Coordination Officer's (CCO) meetings may be held for each jurisdiction in this countywide FIS. An initial CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to explain the nature and purpose of a FIS, and to identify the streams to be studied by detailed methods. A final CCO meeting is held typically with representatives of FEMA, the community, and the study contractor to review the results of the study.

An initial CCO meeting was held in the City of Jacksonville, Florida, on May 6, 1983. Representatives of FEMA, the study contractor, and the Suwannee River Water Management District (SRWMD) were in attendance. A meeting of the SRWMD and the study contractor to discuss the results of the study was held in the City of Live Oak, Florida, on July 3, 1985.

The detailed study area along the Aucilla River was identified by the SRWMD. The U.S. Geological Survey (USGS) provided technical assistance in identifying the locations and number of cross sections. Discussions concerning the Aucilla River Study and field reconnaissance were held with the study contractor, SRWMD, and the USGS. Results of the hydrologic analyses of the Aucilla River basin were coordinated with the USGS and the study contractor.

On July 24, 1986, the results of this FIS were reviewed and accepted at a final CCO meeting attended by representatives of the study contractor, FEMA, and the community.

For this revision, an initial CCO meeting was held on November 8, 2007, and was attended by representatives from Madison County, the Town of Lee, the Town of Greenville, the City of Madison, the SRWMD, the SRWMD's engineering contractor, and FEMA. The meeting highlighted areas that needed to be studied or updated, and the availability of data. A final CCO meeting was held on November 18, 2008, and was attended by representatives of the same organizations as the initial CCO meeting.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Madison County, Florida including the City of Madison, Town of Greenville and Town of Lee.

Flooding caused by overflow of the Aucilla River, Norton Creek, Suwannee River, and the Withlacoochee River within the county was studied in detail.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Madison County.

The effective information found on the previous FIRMs was generated based on the National Geodetic Vertical Datum of 1929 (NGVD 29). For this revision, the effective zones were updated to the North American Vertical Datum of 1988 (NAVD 88). In addition, Norton Creek was studied in detail using new ground survey data.

2.2 Community Description

Madison County is bordered on the south by Lafayette and Taylor Counties, and on the north by Brooks and Lowndes Counties, Georgia. The Suwannee River forms the boundary between Madison County and Suwannee County on the east. The Withlacoochee River, one of the principal tributaries of the Suwannee River, forms the boundary between Madison and Hamilton Counties on the east. The Aucilla River forms approximately 60 percent of the border between Madison and Jefferson Counties, Florida, on the west. The county is served by Interstate 10; U.S. Routes 19, 27, 90, and 227; and the Seaboard Coast Line Railroad and the Norfolk Southern Railway. The 2000 population was reported to be 18,733.

Madison County, established December 26, 1827, and named for President James Madison, occupies 708 square miles in north-central Florida. The county seat is the City of Madison.

Principal commodities of Madison County are wood and wood products. The major agricultural crops are corn, cotton, pecans, watermelons, and tobacco.

The county is in the Gulf Coastal lowlands physiographic area with topography ranging from 30 feet to about 135 feet NGVD 29.

There are two soil associations abutting the Suwannee and Withlacoochee Rivers. The Chipley-Blanton-Swamp Association, adjacent to the rivers, consists of nearly level to gently sloping, moderately well-drained soils, sandy throughout, and moderately well-drained soils with very thick, sandy layers over loamy subsoil, and very poorly drained soils. The next association landward is Alpin-

Blanton-Eustis. This consists of nearly level to sloping, excessively drained soils with very thick, sandy layers over thin, loamy sand, or sandy loam lamella, and moderately well-drained soils with very thick, sandy layers over loamy subsoil, and somewhat excessively drained soils, sandy throughout (Florida Bureau of Comprehensive Planning, 1975).

The drainage area of the Suwannee River at the mouth is 9,950 square miles, of which 4,230 square miles are in north-central Florida and 5,720 square miles in south-central Georgia. The drainage area of the Withlacoochee River is 2,360 square miles, of which 2,090 square miles are in south-central Georgia. The drainage area of the Aucilla River is approximately 760 square miles at the southern Madison County boundary, of which about 330 square miles are above the northern Madison County boundary.

Development in the floodplains of the Suwannee, Withlacoochee, and Aucilla Rivers is primarily residential and agricultural.

2.3 Principal Flood Problems

The Suwannee River experiences greater stage variations than any other river in Florida and has significant flooding problems.

The most severe floods in the Suwannee River basin are associated with storms, or sequences of storms, which produce widespread distribution of rainfall for several days' duration. Flooding occurs in all seasons, but maximum annual stages occur most frequently from February through April as a result of a series of frontal-type rainfall events over the basin. The area is also subject to summer and fall tropical disturbances, occasionally of hurricane intensity. Thunderstorms caused by summer air mass activity produce intense rainfall, but the duration is usually short and areal distribution is relatively small.

A number of major floods have occurred on the Suwannee River during the 20th century. The largest flood at Ellaville occurred in April 1948 with a discharge of 95,300 cubic feet per second (cfs). On the Withlacoochee River, this flood had a discharge of 79,400 cfs at the gage near Pinetta.

During peak stages of the 1948 flood, the Suwannee River was out of its banks from the Gulf of Mexico to north of the Georgia-Florida state line and its width varied from 0.5 to 6 miles. The flooded area comprised almost 500 square miles along the major rivers.

As a result of the April 1973 flood along the Suwannee River in Madison County, many people were forced to evacuate their homes and Madison County was included in the "major disaster area" declared by the President.

The flood of record along the Aucilla River occurred in April 1973. However, it may be assumed that larger events have occurred historically, e.g., April 1948, judging by neighboring basin records.

Log-Pearson Type III analysis of weighted gage station data and regional regression values (USGS, 1982) of 29 years of streamflow data indicate that the 1973 flood had a recurrence interval of 45 years, and the 1957 flood had a recurrence interval of 12 years.

2.4 Flood Protection Measures

Flood protection measures are not known to exist within the study area.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this FIS. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the county at the time of completion of this FIS. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each riverine flooding source studied by detailed methods affecting the county.

Pre-Countywide Analyses

The USGS has been monitoring flows on the Suwannee River since the flood of 1928 and on the Withlacoochee River near Pinetta since October 1931. The hydrologic data analyses for this study utilized these data and the results were coordinated with the USGS (USGS, Vol. FL-1982-4B, revised yearly).

The Branford gage is downstream of Madison County at the Town of Branford in Suwannee County and the Ellaville gage is downstream of the junction with the Withlacoochee River. The Pinetta gage is 22 miles upstream of the mouth of the Withlacoochee River. Table 1, “Historical Floods,” lists historical floods at two gage locations on the Suwannee River and one on the Withlacoochee River.

TABLE 1 – HISTORICAL FLOODS

FLOODING SOURCE AND LOCATION	PEAK DISCHARGES (cfs) 1948	1928	1973	1984	1959
SUWANNEE RIVER					
Near Branford	83,900	65,000	54,700	42,200	34,100
Near Ellaville	95,300	73,000	77,000	46,000	45,200
WITHLACOOCHEE RIVER					
Near Pinetta	79,400	53,600	30,800	43,200	34,500

Regression analyses were used to fill in missing data and to extend records at each gaged location on the Suwannee River to the 57-year period 1928 through 1984. Analyses of discharge records of all gaged locations on the Suwannee River were used to establish a peak discharge-frequency relationship throughout the river. The peak discharge-frequency relationship on the Withlacoochee River was established by log-Pearson Type III frequency analysis of the discharge records from the Pinetta gage. Annual peak discharge for water years 1929, 1930, and 1931 were determined by linear regression analysis on the upstream gage near the City of Quitman, Georgia. Flood recurrence frequencies were determined by log-Pearson Type III statistical analysis in accordance with procedures recommended in Bulletin No. 17B (U.S. Department of the Interior, March 1982).

The USGS has maintained stream gage records on the Aucilla River at the Lamont gage on U.S. Route 19 (Gage No. 02326500) and has recorded all major floods from 1951 to 1979. Additionally, stream gage records for the Aucilla gage at U.S. Route 90 (Gage No. 02326250) are available for the period from 1965 to 1984 and stream gage records for the Scanlon gage (Gage No. 02326512) exist for the years 1957, 1973, and 1977 to 1982.

The discharge data for the Lamont gage were used to develop the peak discharge values (USGS, 1982). The frequency curve for the gaging station was developed following the standard log-Pearson Type III distribution function as outlined in Bulletin No. 17B (U.S. Department of the Interior, March 1982). To compute the flood estimates, the station values were weighted with the regression value, as computed using the methods outlined by USGS Water-Resources Investigations 82-4012 (USGS, 1982).

In the segment of the Aucilla River from Nutall Rise to about 12 miles upstream, a series of sinks exist. This area, where the Aucilla River goes underground, is described in an 1881 document (Report to the Chief of Engineers, 1881). From interviews with residents and field observations, overland flow during recent flood

events has not occurred. However, a local resident reported boating upstream, across this area of sinks, during the April 1948 flood (Suwannee River Water Management District, undated).

To determine the surface flow by subtracting the underground discharge, the HEC-2 backwater curves were computed matching the 1957, 1973, 1977, and 1979 flood stages to their respective discharge values at the Scanlon gage. A statistical plot of these values was used to determine surface discharge rates.

Along the rivers in this area of Florida, discharges may decrease while moving downstream by attenuation, the result of the flat topography and lack of valley formation. This flatness contributes to induced storage between contributing streams.

Revised Analyses

Information on the methods used to determine peak discharge-frequency relationships for the stream studied as part of this countywide FIS is shown below.

This FIS update includes a new detailed study for Norton Creek. The Norton Creek study area is located between County Road 53 and County Road 413 in Madison County. This watershed is approximately 47 square miles located just west of the Withlacoochee River. Land use within the watershed is a mixture of open land, wetlands, and residential areas. There are large ponding areas, as well as sinkholes within the watershed. Flooding of the low lying areas within the Town of Lee, and backwater from the Withlacoochee River has been reported.

Runoff was calculated for Norton Creek using the NRCS Curve Number (CN) Method for rainfall excess. The calculated runoff volume was applied to a unit hydrograph for each subbasin. Rainfall duration was 24 hours distributed according to the SCS Type II rainfall distribution. The rainfall depths were determined from the National Weather Service's Technical Paper #40 (TP-40).

In addition, revised analyses along the Suwannee River were obtained from the Suwannee County, Florida and Incorporated Areas FIS (FEMA, 2007).

A summary of the drainage area-peak discharge relationships for all the streams studied by detailed methods is shown in Table 2, "Summary of Discharges."

TABLE 2 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-PERCENT	2-PERCENT	1-PERCENT	0.2-PERCENT
AUCILLA RIVER					
At U.S. Route 98	926	7,600	14,600	18,700	28,700
Approximately 6.8 miles downstream of State Route 257 at destroyed bridge (Scanlon Gage)	805	4,500	7,000	8,200	11,000
At U.S. Route 19 (Lamont Gage)	747	6,090	11,800	15,000	23,200
At U.S. Route 90 (Aucilla Gage)	345	2,250	4,350	5,400	8,650
NORTON CREEK					
Just upstream of confluence of the Withlacoochee River	47	695	1,281	1,603	2,277
At Route U.S. 90					
Approximately 4.2 miles upstream of confluence with the Withlacoochee River)	23	124	209	248	293
At Route I-10					
Approximately 10 miles upstream of confluence with the Withlacoochee River	9	194	269	320	416
SUWANNEE RIVER					
Near Branford (USGS Gage No. 02320500)[1]	7,880	34,800	54,000	62,900	85,300
Near Ellaville (USGS Gage No. 02319500)[2]	6,850	41,000	65,300	76,500	104,000
Just upstream of the confluence of the Withlacoochee River	4,610	26,200	40,500	46,700	63,100
WITHLACOOCHEE RIVER					
At mouth	2,360	22,900	38,600	46,000	65,900
At County Route 150	2,120	25,600	45,100	54,900	81,400
At northern county boundary	2,090	26,600	47,600	58,400	87,400

[1]On north side of bridge for U.S. Routes 27 and 129 near east bank of the Suwannee River – records July 1931 to date.
[2]On south bank of the Suwannee River 900 feet east of U.S. Route 90 – records January 1927 to date.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the source studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

Pre-Countywide Analyses

The Suwannee and Withlacoochee Rivers cross-section data were obtained by aerial survey methods for the floodplain areas and by field measurements for the main channel and immediate overbanks (USACE, 1982; USACE, 1984). The Aucilla River cross sections for the backwater analyses were obtained through photogrammetric means from aerial photographs taken in February 1984 (Suwannee River Water Management District, February 1984). Additional floodplain cross sections, below-water sections, and bridge data were obtained through field surveys. Field data were compared to the photogrammetric data for consistency.

Water-surface elevations of floods on the Suwannee, Withlacoochee, and Aucilla Rivers of the selected recurrence intervals were computed through the use of the USACE HEC-2 step-backwater computer program (USACE, 1984). Roughness coefficients (Manning's "n") used in the hydraulic computations were determined by analyzing known flood events along the Suwannee and Withlacoochee Rivers in Madison County. The flood events used for computing the Manning's "n" values for the Suwannee and Withlacoochee Rivers are shown in Table 1. Manning's "n" for the Aucilla River were determined by computer modeling of the backwater curves to match the high-water marks of the September 1957 and the April 1973 floods.

Roughness coefficients for the Suwannee River model were 0.045 for the main channel and 0.20 for the overbank. Roughness coefficients for the Withlacoochee River were 0.045 for the main channel and 0.25 for the overbank. Roughness coefficients for the Aucilla River averaged 0.075 for the main channel and 0.15 for the overbank. Field observations of the stream and floodplain areas and aerial photo analyses were also used to ensure continuity.

Starting water-surface elevations for the Suwannee River were based on the results of backwater studies performed for Lafayette County. Starting water-surface elevations for the Withlacoochee River were based on the computer water-surface elevations for the Suwannee River. Starting water-surface elevations for the Aucilla River were based on slope/area computations.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was

computed (Section 4.2), selected cross section locations are also shown on the FIRM (Exhibit 2). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

Revised Analyses

The Norton Creek study includes approximately 12.5 miles and traverses northeast from Interstate 10, through the City of Lee, and continuing past US Highway 90 and on to the Withlacoochee River. The study is based on new ground survey data (Rochester & Associates, 2008). Flood elevations were computed using the ICPR Version 3.10. Starting water surface elevation (i.e., tailwater elevation) at the confluence with the Withlacoochee River was obtained from the previous study. Flood profiles were drawn showing computed water surface elevations for floods of the selected recurrence intervals.

Roughness factors (Manning's "n") used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the streams and floodplain areas. Roughness factors varied from 0.06 to 0.09 for the main channel and .09 to .15 for the overbank area.

In addition, revised analyses along the Suwannee River were obtained from the Suwannee County, Florida and Incorporated Areas FIS (FEMA, 2007).

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NGVD 29. Structure and ground elevations in the community must, therefore, be referenced to NGVD 29. It is important to note that adjacent communities may be referenced to NAVD 88. This may result in differences in base flood elevations across the corporate limits between the communities.

As noted above, the elevations shown in the FIS report and on the FIRM for Madison County, Florida and Incorporated Areas are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. The conversion factor to NGVD 29 is +0.7 foot. The BFEs shown on the FIRM represent whole-foot

rounded values. For example, a BFE of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users that wish to convert the elevations in the FIS to NGVD 29 should apply the stated conversion factor to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992, or contact NGS Information Services, NOAA, N/NGS12, National Geodetic Survey, SSMC-3, #9202, 1315 East-West Highway, Silver Spring, Maryland 20910-3282 (Internet address http://www.ngs.noaa.gov).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent annual chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent annual chance flood elevations; delineations of the 1- and 0.2-percent annual chance floodplains; and 1-percent annual chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance flood is employed to indicate additional areas of flood risk in the county. For the streams studied in detail, the 1- and 0.2-percent annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section.

The 1- and 0.2-percent annual chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE), and the 0.2-percent annual chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent annual chance floodplain boundaries are close together, only the 1-percent annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent annual chance floodplain boundary is shown on the FIRM (Exhibit 2).

Pre-Countywide Mapping

Between cross sections on the Suwannee River, the boundaries have been interpolated using topographic maps at a scale of 1:12,000 with a contour interval of 2 feet (USACE, 1982). Between cross sections on the Withlacoochee River, the boundaries have been interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (USGS, 1973, et cetera). Between cross sections on the Aucilla River, the boundaries have been interpolated using aerial compiled topographic maps at a scale of 1:4,800 with a contour interval of 4 feet (Woolpert Consultants, 1984).

Revised Mapping

For this revision, the Norton Creek floodplain was delineated based on the USGS 5-foot contours, using the flood elevations from the detailed model. In addition to the approximate methods mentioned above, approximate Zone A boundaries were supplemented with wetland location data from the Suwannee River Water Management District (SRWMD). SRWMD refers to this wetland location dataset as WETCOMP. WETCOMP features were incorporated into the Zone A information. In areas where WETCOMP features coincide with existing areas studied by detailed methods, the detailed floodplain boundaries superseded WETCOMP.

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent annual chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent annual chance flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this FIS are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

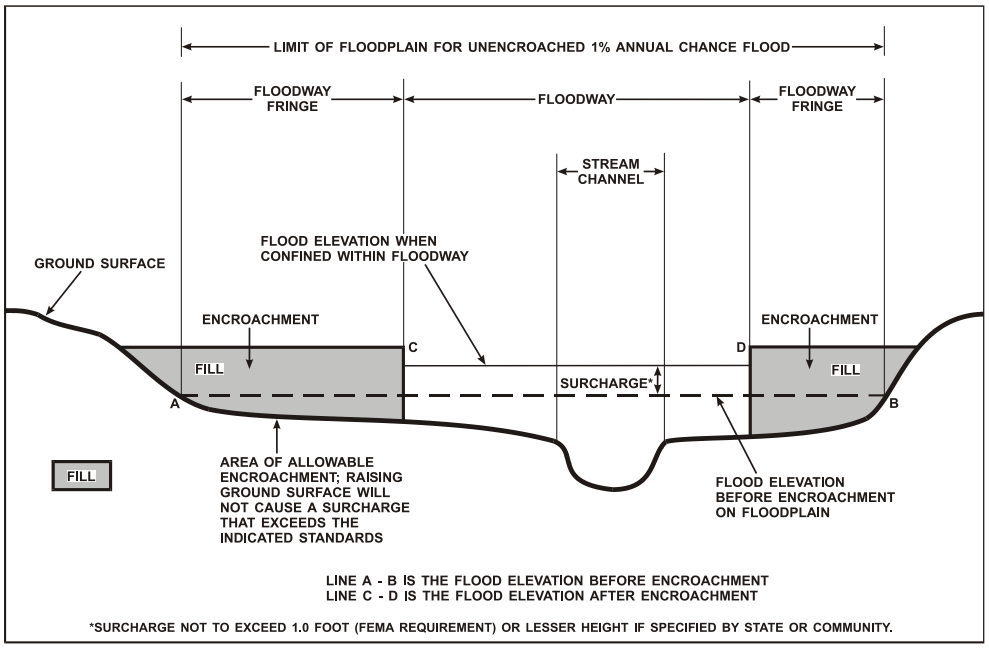
The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 3). The computed floodways are shown on the FIRM (Exhibit 2). In cases where the floodway and 1-percent annual chance floodplain boundaries are either close together or collinear, only the

floodway boundary is shown. Portions of the floodways for the Suwannee, Withlacoochee, and Aucilla Rivers extend beyond the county boundary. Please note that a floodway has not been computed for Norton Creek.

Encroachment into areas subject to inundation by floodwaters having hazardous velocities aggravates the risk of flood damage, and heightens potential flood hazards by further increasing velocities. A listing of stream velocities at selected cross sections is provided in Table 3, "Floodway Data." In order to reduce the risk of property damage in areas where the stream velocities are high, the community may wish to restrict development in areas outside the floodway.

The area between the floodway and 1-percent annual chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the

floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent annual chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.



FLOODWAY SCHEMATIC Figure 1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Aucilla River								
A	25.81	2,117	14,651	1.0	45.4	45.4	46.3	0.9
B	26.80	2,006	12,333	1.2	47.4	47.4	48.4	1.0
C	27.47	1,755	13,359	1.1	49.1	49.1	50.1	1.0
D	28.11	3,800	23,711	0.6	49.7	49.7	50.7	1.0
E	28.48	3,305	19,630	0.8	49.9	49.9	50.9	1.0
F	29.36	2,773	17,020	0.9	50.4	50.4	51.4	1.0
G	29.95	1,517	11,135	1.3	51.3	51.3	52.3	1.0
H	30.48	829	7,075	2.1	52.8	52.8	53.8	1.0
I	30.75	1,767	14,857	1.0	53.6	53.6	54.6	1.0
J	31.42	1,644	13,292	1.1	54.8	54.8	55.8	1.0
K	31.70	767	6,810	2.2	55.8	55.8	56.8	1.0
L	32.34	1,177	11,883	1.3	58.0	58.0	59.0	1.0
M	32.57	751	8,245	1.8	58.5	58.5	59.5	1.0
N	32.81	1,108	12,898	1.2	59.0	59.0	60.0	1.0
O	33.33	1,362	14,022	1.1	59.5	59.5	60.5	1.0
P	33.61	1,948	20,240	0.7	59.8	59.8	60.8	1.0
Q	33.93	513	5,915	2.5	60.9	60.9	61.8	0.9
R	33.97	2,028	18,179	0.8	61.2	61.2	62.2	1.0
S	34.81	1,955	19,530	0.8	62.0	62.0	63.0	1.0
T	35.62	2,046	17,272	0.9	62.7	62.7	63.7	1.0
U	36.18	1,504	13,292	1.1	63.3	63.3	64.3	1.0
V	37.21	1,098	10,218	1.5	65.0	65.0	66.0	1.0
W	37.73	960	10,405	1.4	66.5	66.5	67.5	1.0
X	38.53	3,726	31,686	0.5	66.9	66.9	67.9	1.0
Y	39.15	2,905	27,146	0.6	67.1	67.1	68.1	1.0
Z	39.50	4,434	29,047	0.5	67.2	67.2	68.2	1.0

[1]Miles above mouth
[2]This width extends beyond county boundary

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL AND INCORPORATED AREAS

FLOODWAY DATA

AUCILLA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Aucilla River (continued)								
AA	40.27	1,027	8,548	1.8	68.0	68.0	69.0	1.0
AB	40.51	2,179	16,096	0.9	68.7	68.7	69.7	1.0
AC	40.98	1,531	11,102	1.1	69.4	69.4	70.4	1.0
AD	41.24	1,623	12,071	1.0	70.1	70.1	71.1	1.0
AE	41.54	2,223	17,488	0.7	70.5	70.5	71.5	1.0
AF	41.99	2,165	15,936	0.8	71.1	71.1	72.1	1.0
AG	42.45	1,599	12,035	1.0	72.0	72.0	73.0	1.0
AH	42.88	1,640	13,638	0.9	72.6	72.6	73.6	1.0
AI	43.19	1,453	12,706	1.0	73.1	73.1	74.1	1.0
AJ	43.67	1,141	9,424	1.1	73.8	73.8	74.8	1.0
AK	44.43	2,162	16,140	0.6	74.7	74.7	75.7	1.0
AL	44.76	1,510	11,639	0.9	75.1	75.1	76.1	1.0
AM	45.35	1,213	9,490	1.1	76.0	76.0	76.9	0.9
AN	45.71	1,067	8,525	1.2	76.7	76.7	77.7	1.0
AO	45.89	1,219	9,067	1.1	77.0	77.0	78.0	1.0
AP	46.25	1,018	8,419	1.2	77.8	77.8	78.8	1.0
AQ	46.58	1,252	11,451	0.9	78.2	78.2	79.2	1.0
AR	46.84	1,495	12,458	0.8	78.4	78.4	79.4	1.0
AS	47.13	1,368	11,926	0.9	78.7	78.7	79.7	1.0
AT	47.44	1,174	10,295	1.0	79.1	79.1	80.1	1.0
AU	47.77	1,135	10,936	0.9	79.4	79.4	80.4	1.0
AV	47.87	1,552	13,529	0.8	79.6	79.6	80.6	1.0
AW	48.03	950	8,875	1.1	79.8	79.8	80.8	1.0
AX	48.47	1,602	11,408	0.5	80.2	80.2	81.2	1.0
AY	48.86	896	7,444	0.7	80.4	80.4	81.4	1.0
AZ	49.32	619	4,959	1.1	81.2	81.2	82.1	0.9

[1]Miles above mouth
[2]This width extends beyond county boundary

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL AND INCORPORATED AREAS

FLOODWAY DATA

AUCILLA RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Aucilla River (continued)								
BA	49.53	1,382	8,659	0.6	81.4	81.4	82.3	0.9
BB	49.63	1,514	11,647	0.5	81.4	81.4	82.3	0.9
BC	49.77	2,540	19,754	0.3	81.5	81.5	82.4	0.9
BD	50.05	1,873	14,645	0.4	81.6	81.6	82.5	0.9
BE	50.43	2,581	18,858	0.3	81.6	81.6	82.5	0.9
BF	50.78	2,823	19,341	0.3	81.7	81.7	82.6	0.9
BG	51.20	2,715	15,288	0.4	81.8	81.8	82.7	0.9
BH	51.56	1,901	12,403	0.4	81.9	81.9	82.8	0.9
Suwannee River								
A	116.26	4,989	113,313	0.6	59.8	59.8	60.7	0.9
B	117.17	4,434	81,778	0.9	60.1	60.1	61.0	0.9
C	118.66	4,824	75,722	0.9	60.7	60.7	61.6	0.9
D	120.87	6,136	91,171	0.8	61.6	61.6	62.5	0.9
E	122.45	4,611	63,231	1.1	62.3	62.3	63.2	0.9
F	124.42	7,996	110,861	0.6	63.1	63.1	64.0	0.9
G	126.58	4,529	69,121	1.1	64.5	64.5	65.4	0.9

[1]Miles above mouth
[2]This width extends beyond county boundary

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL AND INCORPORATED AREAS

FLOODWAY DATA

AUCILLA RIVER – SUWANNEE RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY[3]	WITHOUT FLOODWAY[3]	WITH FLOODWAY[3]	INCREASE
Withlacoochee River								
A	2.05	4,731	47,521	1.0	66.1	65.5[4]	66.5	1.0
B	4.03	5,180	62,466	0.7	67.0	67.0	67.9	0.9
C	5.42	6,014	68,444	0.7	67.7	67.7	68.6	0.9
D	7.05	5,775	55,354	0.8	68.7	68.7	69.6	0.9
E	8.27	4,469	48,779	1.0	69.7	69.7	70.6	0.9
F	9.06	3,399	27,922	1.7	70.7	70.7	71.7	1.0
G	10.19	2,848	24,910	1.9	72.7	72.7	73.6	0.9
H	11.15	4,663	33,853	1.4	73.9	73.9	74.8	0.9
I	11.68	4,500	60,721	0.8	74.5	74.5	75.5	1.0
J	12.82	3,840	58,971	0.9	75.6	75.6	76.5	0.9
K	13.62	3,227	39,215	1.3	76.4	76.4	77.3	0.9
L	14.24	3,123	43,979	1.2	77.3	77.3	78.2	0.9
M	15.25	3,163	45,815	1.1	78.4	78.4	79.4	1.0
N	16.45	3,545	50,352	1.0	79.4	79.4	80.4	1.0
O	17.53	3,937	50,921	1.0	80.3	80.3	81.3	1.0
P	18.34	4,097	59,849	0.8	80.8	80.8	81.7	0.9
Q	19.66	4,369	45,731	1.1	81.3	81.3	82.2	0.9
R	20.48	3,652	38,294	1.3	81.8	81.8	82.7	0.9
S	21.56	3,159	25,532	2.0	83.2	83.2	84.1	0.9
T	21.98	2,533	22,085	2.5	84.1	84.1	85.0	0.9
U	23.00	3,657	35,464	1.5	85.8	85.8	86.7	0.9
V	24.09	3,524	36,611	1.5	87.5	87.5	88.5	1.0
W	25.61	2,469	29,260	1.9	90.2	90.2	91.1	0.9
X	26.81	2,416	37,290	1.5	92.1	92.1	93.0	0.9
Y	27.57	3,612	57,173	1.0	93.3	93.3	94.3	1.0
Z	29.91	4,951	87,853	0.6	95.2	95.2	96.2	1.0
AA	30.67	4,172	66,979	0.9	95.7	95.7	96.7	1.0

[1]Miles above confluence with Suwannee River
[2]Width extends beyond county boundary
[3]Elevation computed using a vertical datum conversion of -0.8 (NAVD = NGVD – 0.8)
[4]Elevation computed without consideration of overflow effects from Suwannee River

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL AND INCORPORATED AREAS

FLOODWAY DATA

WITHLACOOCHEE RIVER

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. The zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 1-percent annual chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 1-percent annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Area of special flood hazard formerly protected from the 1-percent annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1-percent annual chance or greater flood event.

Zone A99

Zone A99 is the flood insurance rate zone that corresponds to areas of the 1-percent annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or depths are shown within this zone.

Zone V

Zone V is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no base flood elevations are shown within this zone.

Zone VE

Zone VE is the flood insurance rate zone that corresponds to the 1-percent annual chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2-percent annual chance floodplain, areas within the 0.2-percent annual chance floodplain, and to areas of 1-percent annual chance flooding where average depths are less than 1 foot, areas of 1-percent annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent annual chance flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 1-percent annual chance floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent annual chance floodplains. Floodways and the locations of selected cross sections used in the hydraulic analyses and floodway computations are shown where applicable.

The current FIRM presents flooding information for the entire geographic area of Madison County. Previously, separate Flood Hazard Boundary Maps and/or FIRMs were prepared for each identified flood-prone incorporated community and the unincorporated areas of the county. This countywide FIRM also includes flood hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community, up to and including this countywide FIS, are presented in Table 4, "Community Map History."

7.0 OTHER STUDIES

Because it is based on more up-to-date analyses, this FIS supersedes the previously printed Flood Hazard Boundary Map for Madison County (U.S. Department of Housing and Urban Development, 1977), and a Special Flood Hazard Information Report (USACE, 1974).

FISs for adjacent Florida counties Taylor, Lafayette,, Suwannee, and Hamilton County have been recently completed and are in varying stages of adoption.

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Madison County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports, FHBMs, FBFMs, and FIRMs for all of the incorporated areas within Madison County.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA, Mitigation Division, Koger Center - Rutgers Building, 3003 Chamblee Tucker Road, Atlanta, Georgia 30341.

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Greenville, Town of	June 28, 1974	January 9, 1976	July 1, 1987	
Lee, Town of	September 6, 1974	January 30, 1976	April 30, 1986	
Madison County (Unincorporated Areas)	January 31, 1975	January 7, 1977	June 4 ,1987	
Madison, City of	January 24, 1974	May 21, 1976	May 15, 1986	

TABLE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

9.0 BIBLIOGRAPHY AND REFERENCES

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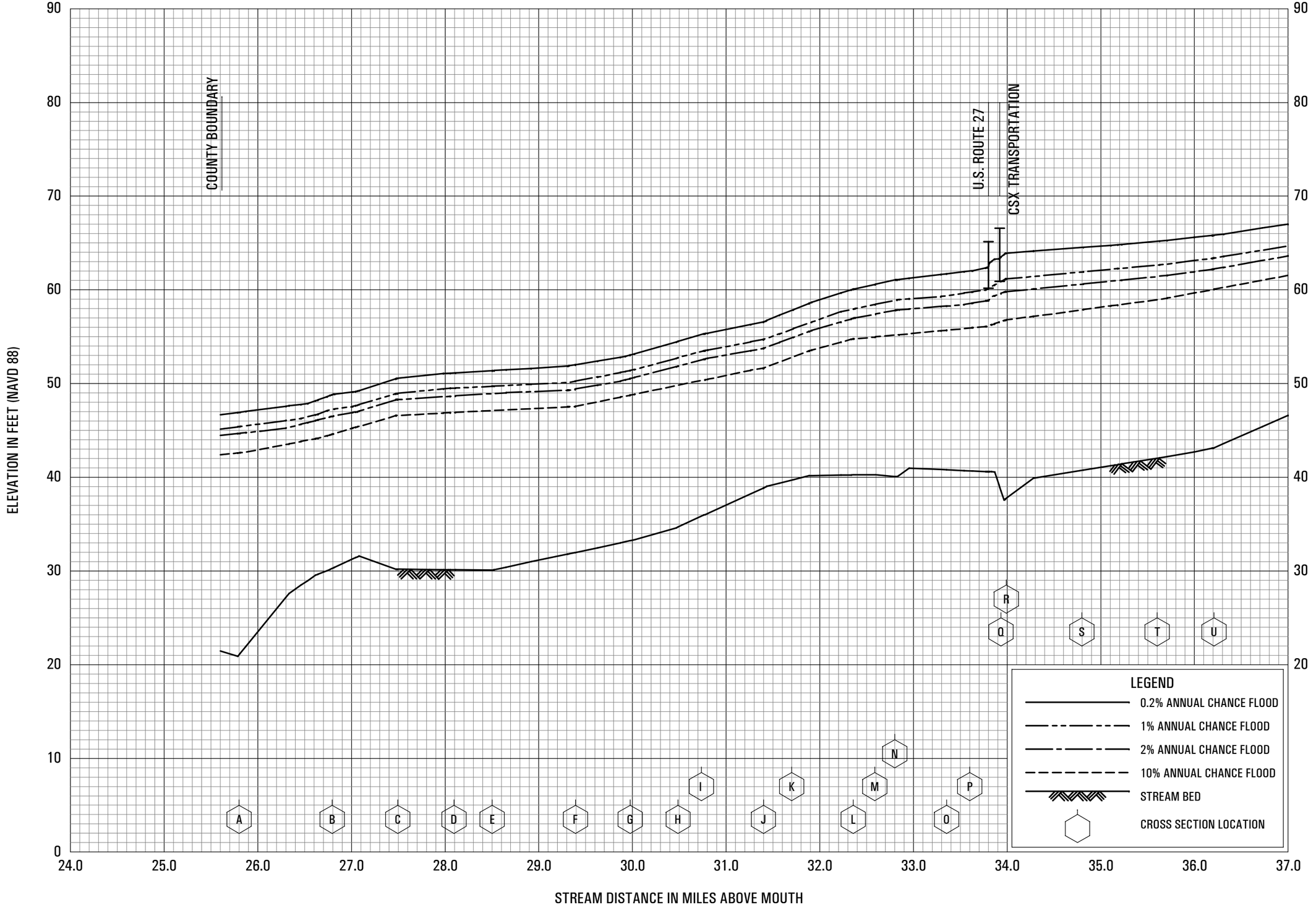


FLOOD PROFILES

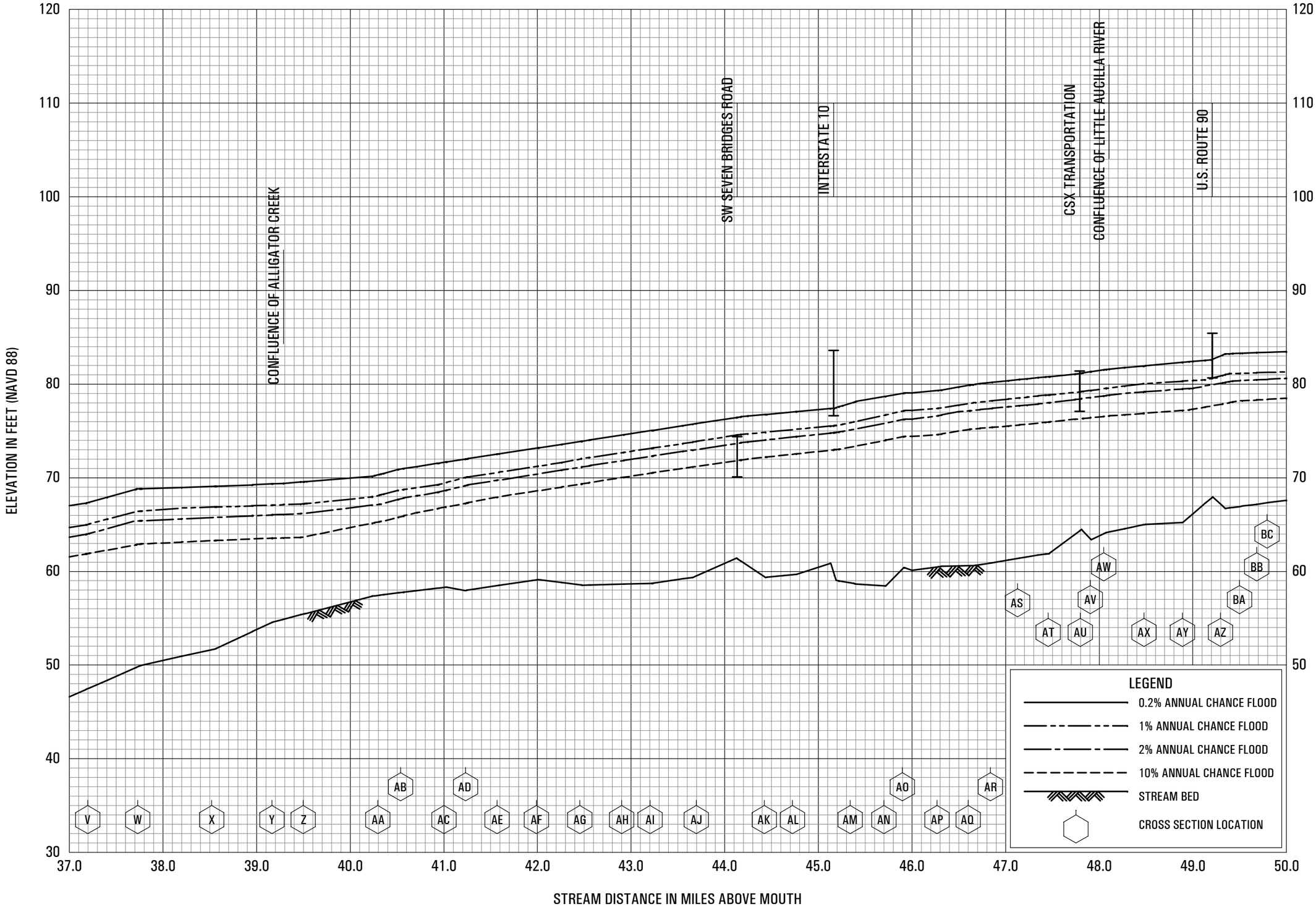
AUCILLA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS

01P



FLOOD PROFILES

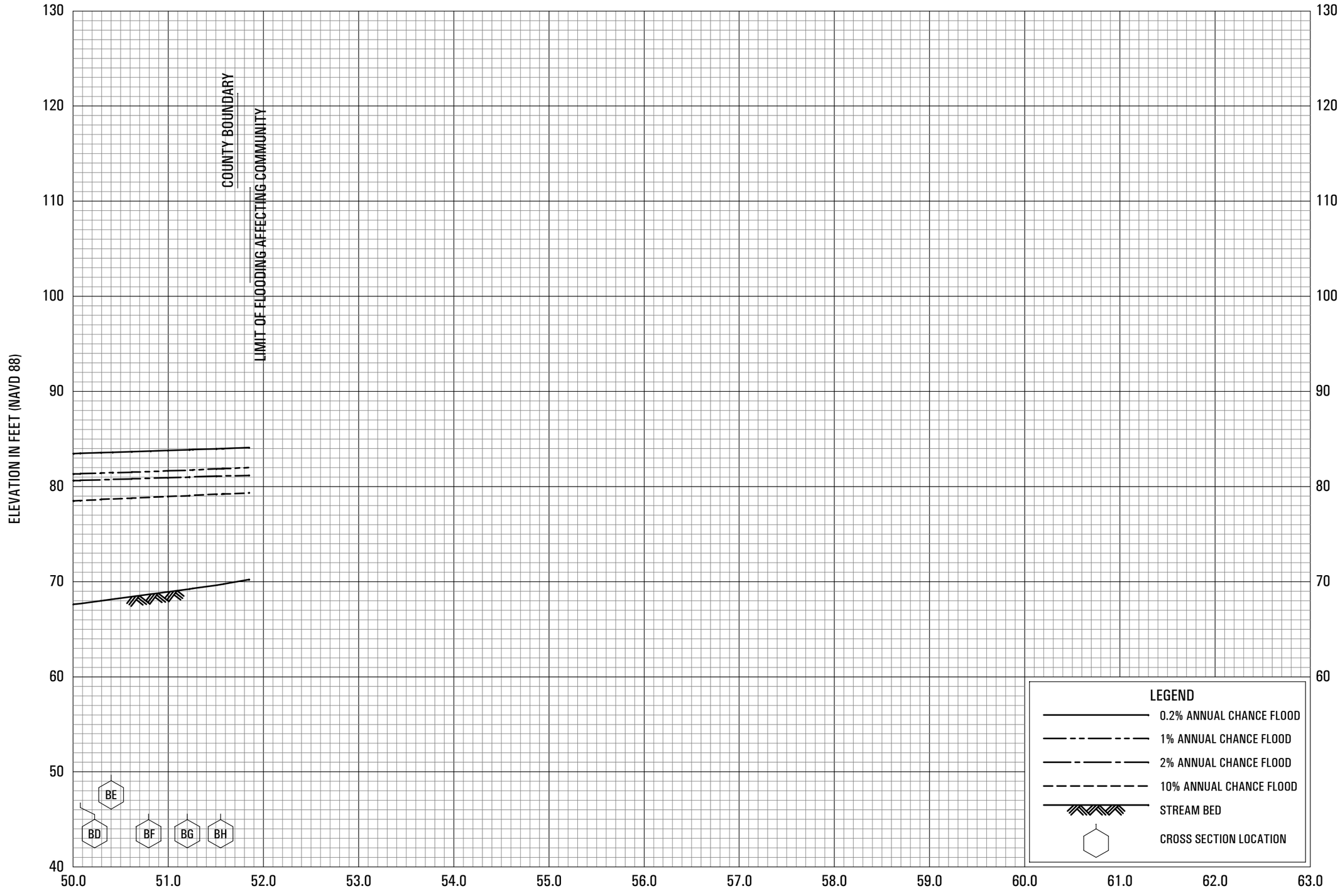
AUCILLA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS

02P



FLOOD PROFILES

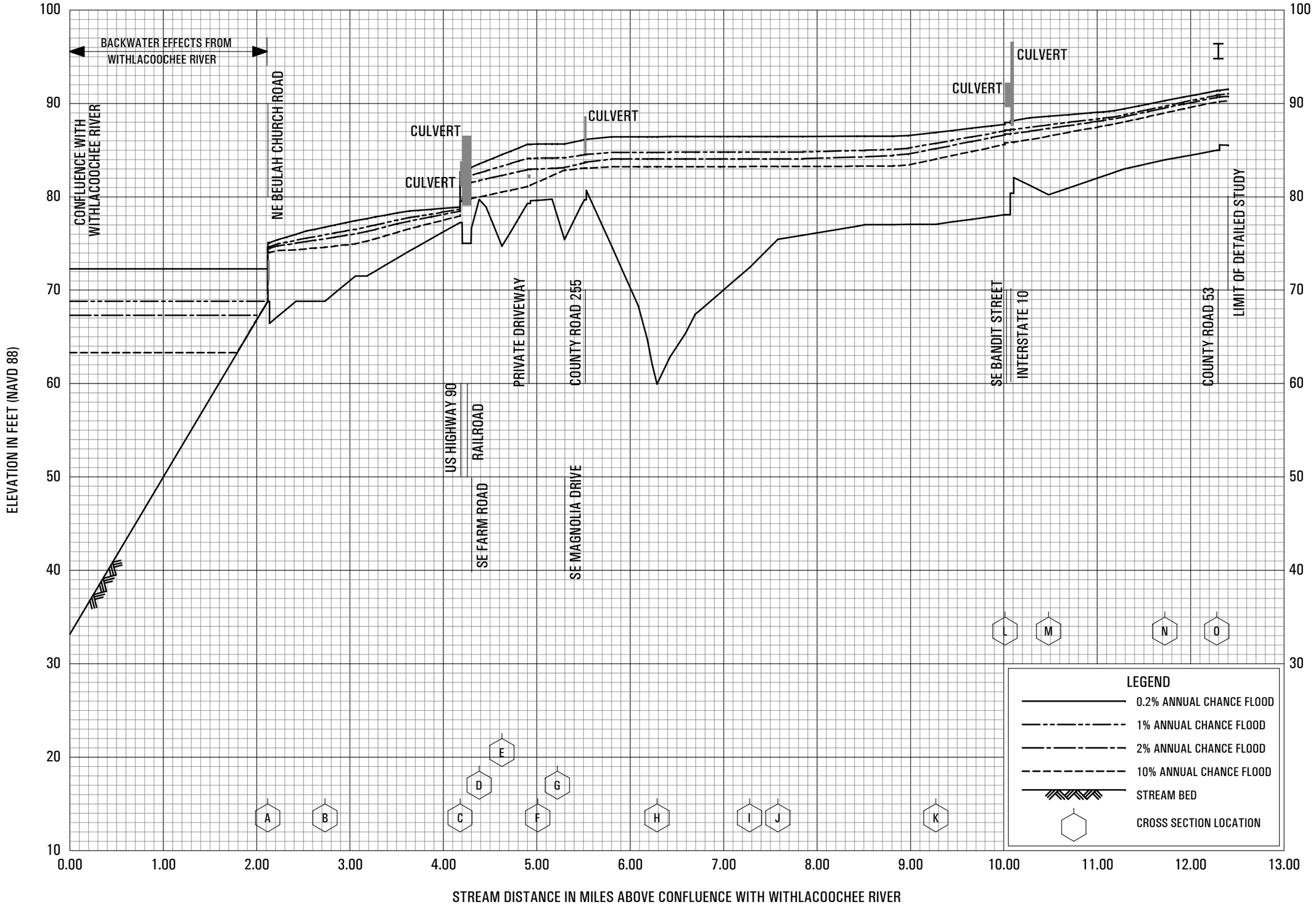
AUCILLA RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS

03P



FLOOD PROFILES

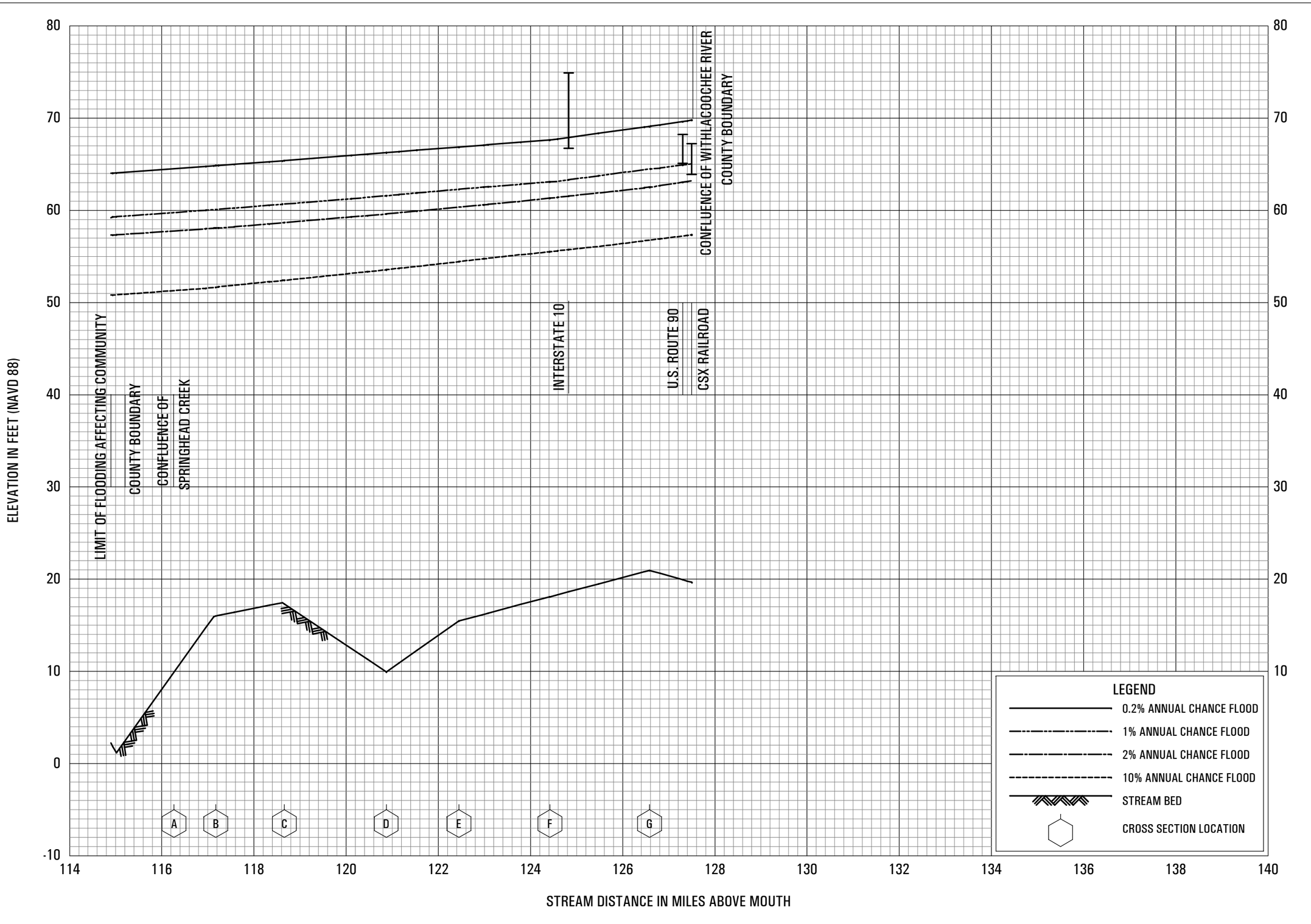
NORTON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS

04P



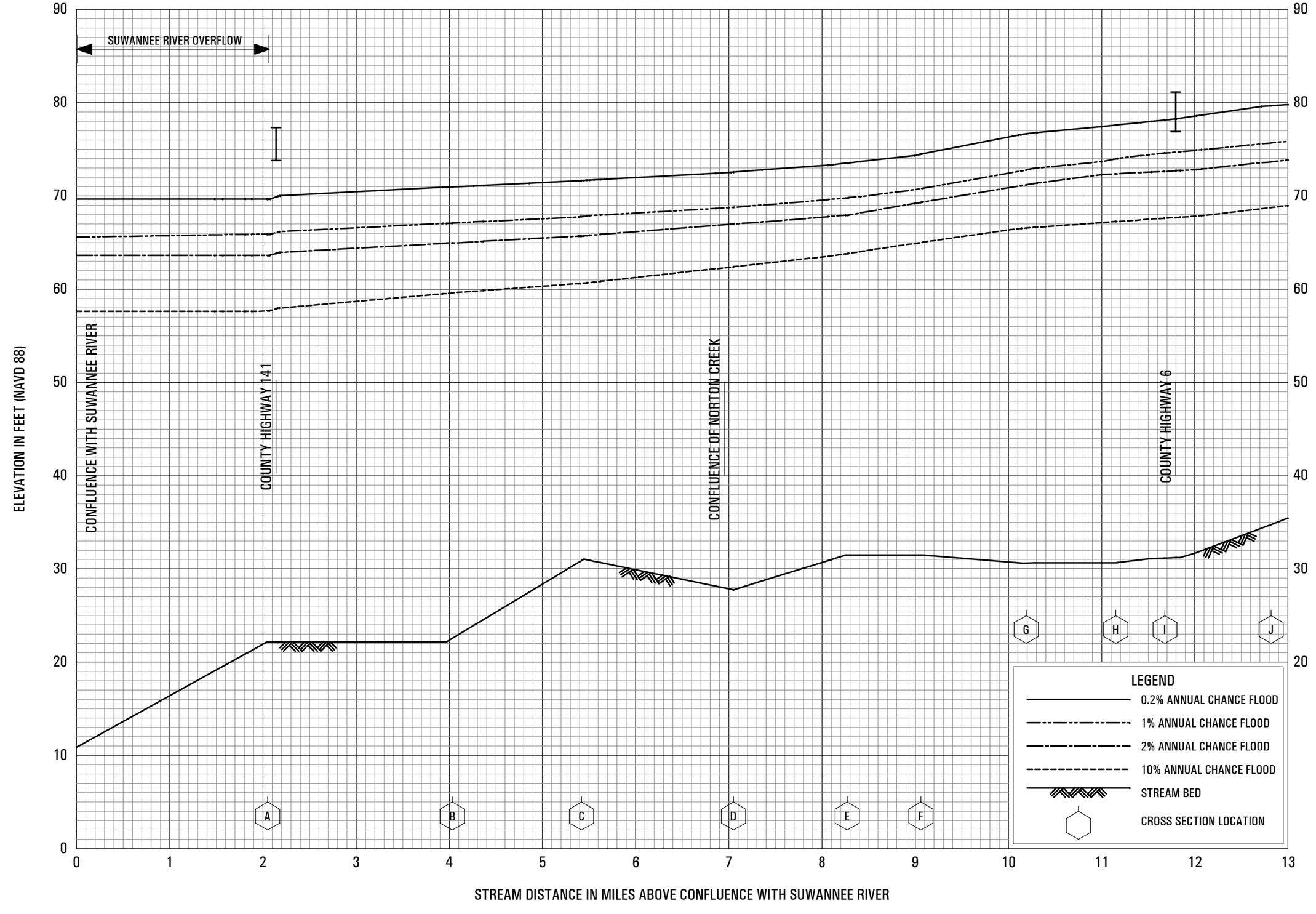
FLOOD PROFILES

SUWANNEE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS



FLOOD PROFILES

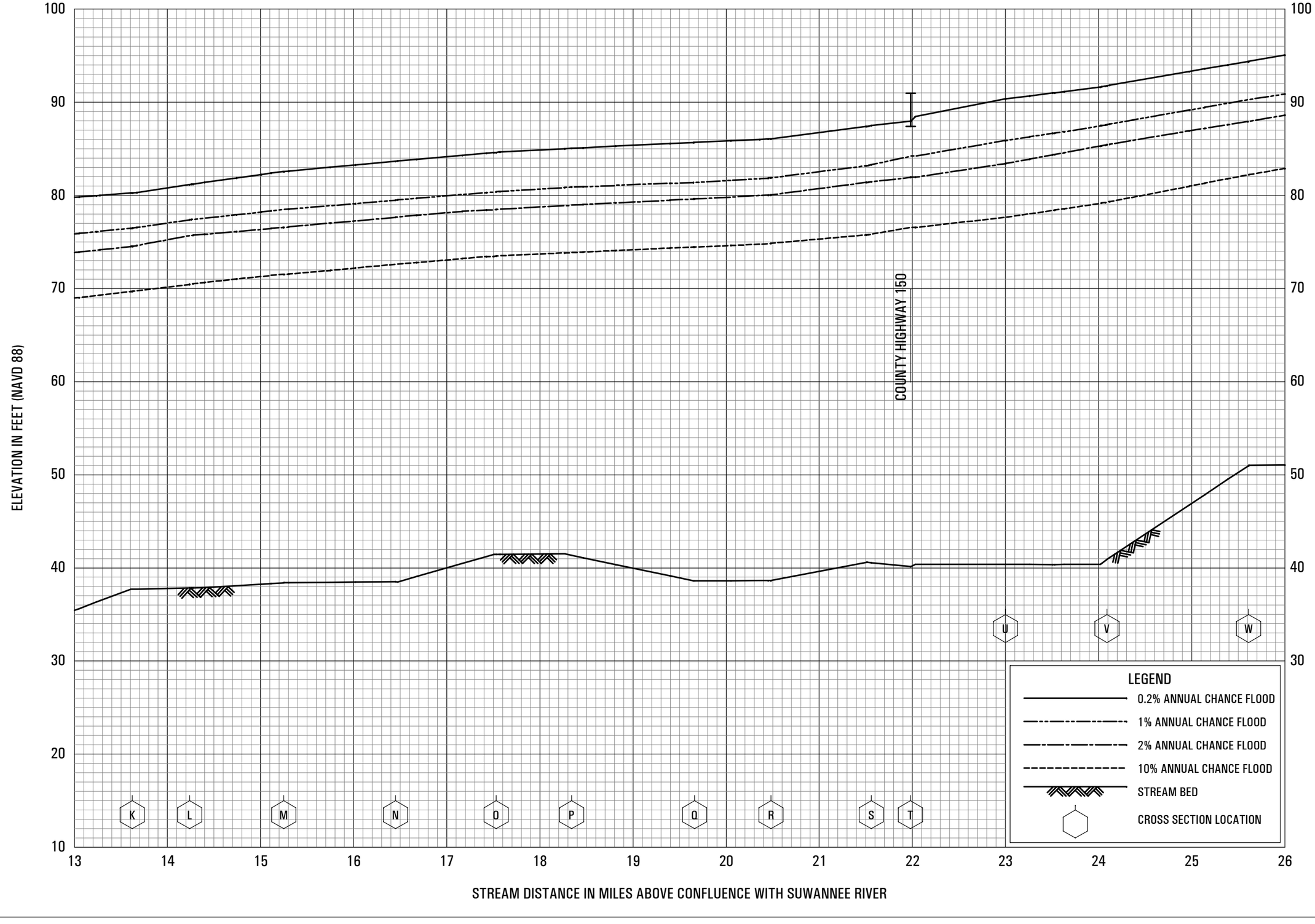
WITHLACOOCHEE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS

06P



FLOOD PROFILES

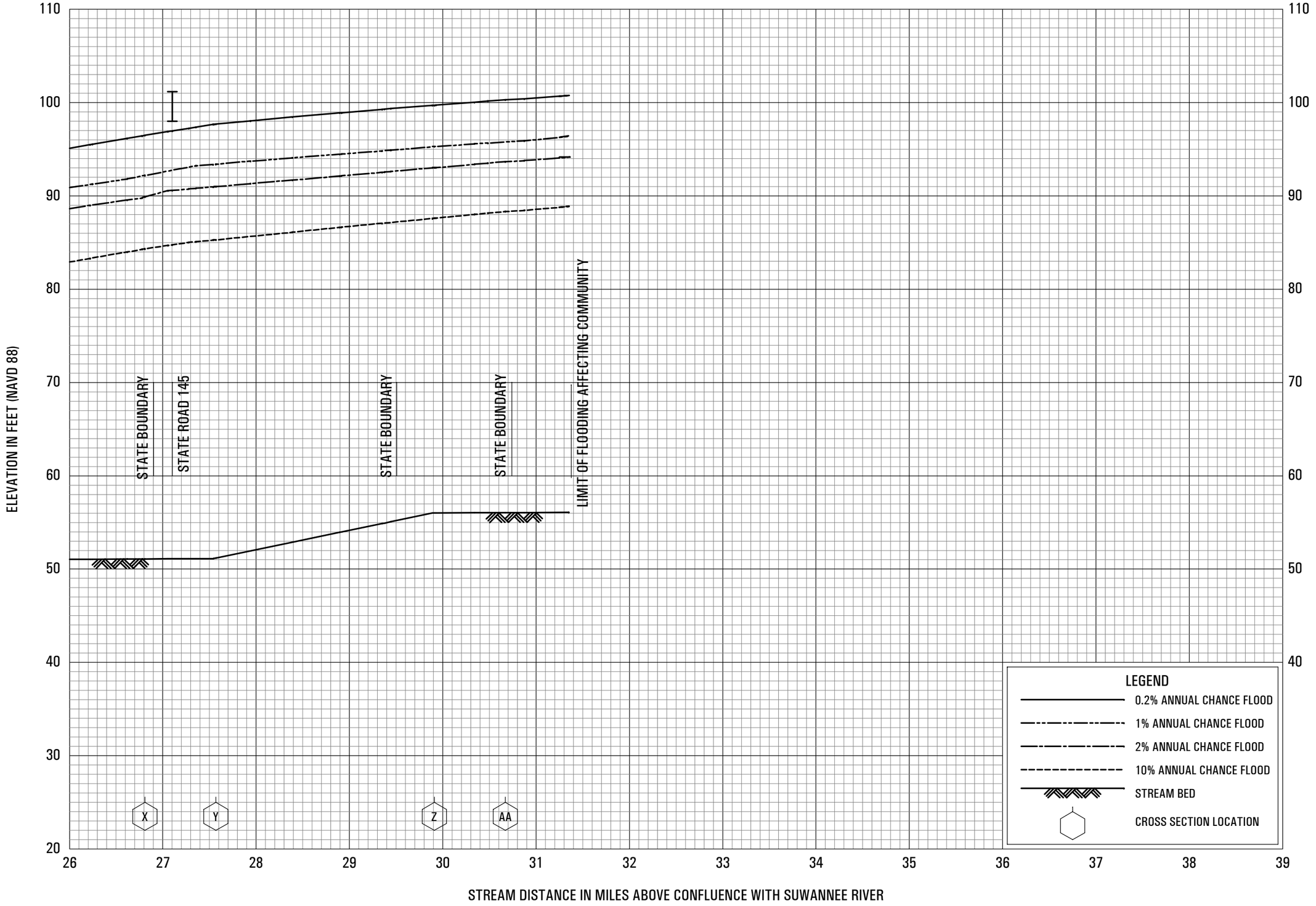
WITHLACOOCHEE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS

07P



FLOOD PROFILES

WITHLACOOCHEE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

MADISON COUNTY, FL

AND INCORPORATED AREAS